Federal Emergency Management Agency

Washington, D.C. 20472

June 22, 1982

Honorable George Bush
President of the Senate

Honorable Thomas P. O'Neill, Jr.
Speaker of the House of Representatives

Sirs:

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be stockpiled in the interest of national defense to preclude a costly and dangerous dependence upon foreign sources of supply in times of national emergency.

The President delegated stockpile planning and policy activities to the Director of the Federal Emergency Management Agency. This Stockpile Report to the Congress for April - September 1981, together with a Statistical Supplement under separate cover, is submitted in accordance with section 11 of the Stock Piling Act.

Sincerely,

Louis O. Giuffrida
Director

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HIGHLIGHTS

- Acquisitions—cobalt, bauxite, iridium, tantalum, quinidine sulfate, jewel bearings.
- Disposals were authorized for a 3-year period from 1982-1984.
- Silver requirements are to be reevaluated.
- Stock Piling Act was amended.
  - 5-year limit on use of appropriated funds was removed.
  - Cap was placed on amount of money that can be held in the Stockpile Fund.
  - The Annual Materials Plan was added as a required part of the President's budget and is to cover 5 fiscal years.

NATIONAL DEFENSE STOCKPILE INVENTORY
September 30, 1981

	Acquisition Cost (Billions of $)	Market Value[1] (Billions of $)
Reserved for Goals	$2.4	$7.75
Excess above Goals	1.1	4.57
Total	$3.5	$12.32

[1] Market values are prices at which comparable materials are being traded, or in the absence of trading, values are estimates.

CONTINUING ACTIVITIES

The Strategic and Critical Materials Stock Piling Act provides that . stock of strategic and critical materials be held .o decrease dependence upon foreign sources of supply in times of emergency. Executive Order 12155 delegates the primary responsibility for planning and coordinating the stockpile program to the Director of the Federal Emergency Management Agency (FEMA).

The Stock Piling Act requires that the stockpile inventory be sufficient to cover U.S. needs for not less than three years of a national emergency. The President's stockpile policy guidance includes detailed assumptions regarding changes in a wartime civil economy, wartime foreign trade patterns, shipping losses, wartime political and economic stability of foreign nations, and alternate foreign and domestic production levels for stockpile materials. These guidelines are followed in determining the stockpile goals which represent the difference between estimated supply and projected requirements for each strategic material. Periodic review and updating of the goals are required by the President's policy to ensure a current estimate of our Nation's vulnerability to resource shortages during an emergency. Revised goals were announced on May 2, 1980.

The stockpile inventory is compared with the 1980 goals in figure 1. Major restructuring of the stockpile inventory is necessary because most of the materials now in inventory were acquired during the 1950's. To fill the 1980 goals at September 1981 prices would require purchase of additional materials valued at approximately $12 billion. The stockpile inventory contains $7.8 billion of the needed materials for a total goal value of $20 billion. Since the stockpile inventory is valued at $12.3 billion, there is an excess not held for goals of $4.6 billion.

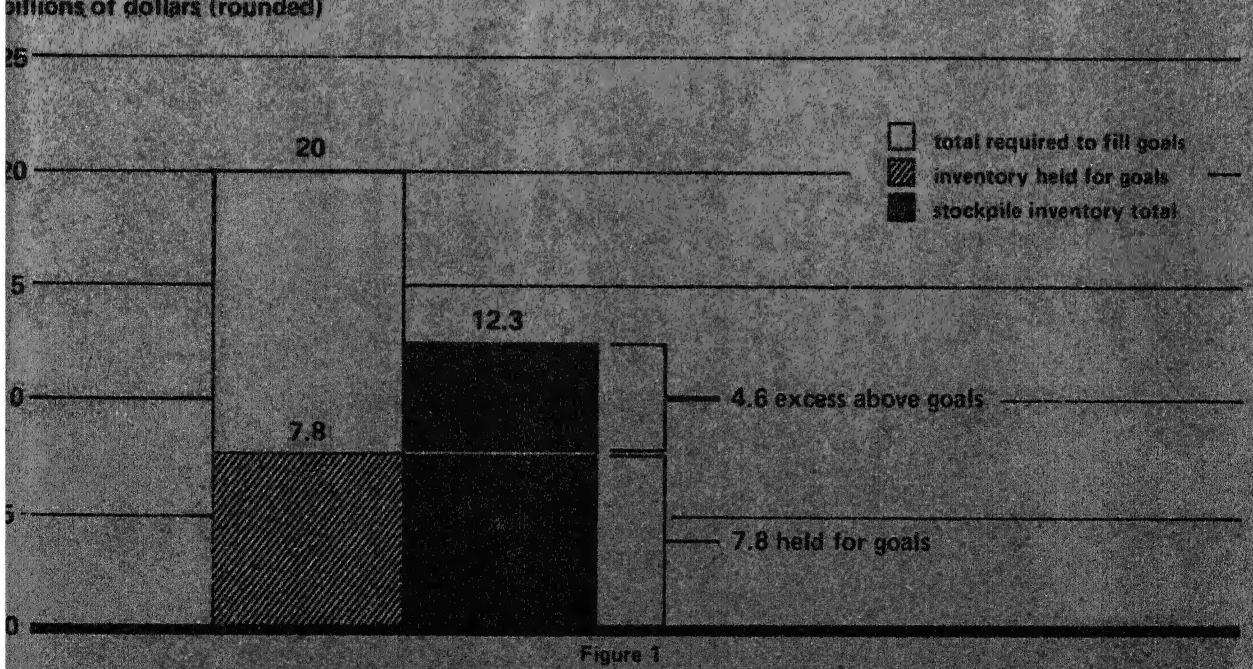


Figure 1

Restructuring of stockpile to meet 1980 goals.

[illegible] the 61 family groups and individual materials in the stockpile can be divided into two categories.

(1) 24 groups and individual materials with inventory equal to or greater than the goals.

(2) 37 groups and individual materials with inventory less than the goal. Of these, 13 goals are over 50 percent filled.

[illegible] the Office of Management and Budget. The AMP process begins with FEMA giving a list of goals, deficits, excesses, and priorities to the General Services Administration. The materials proposed for purchase or disposal are ranked according to national security priorities. The General Services Administration makes an initial assessment of the market for these materials and determines the quantities that could be bought and/or sold without undue disruption of usual markets. After these market constraints are added, the list is given to the AMP subcommittees for review.

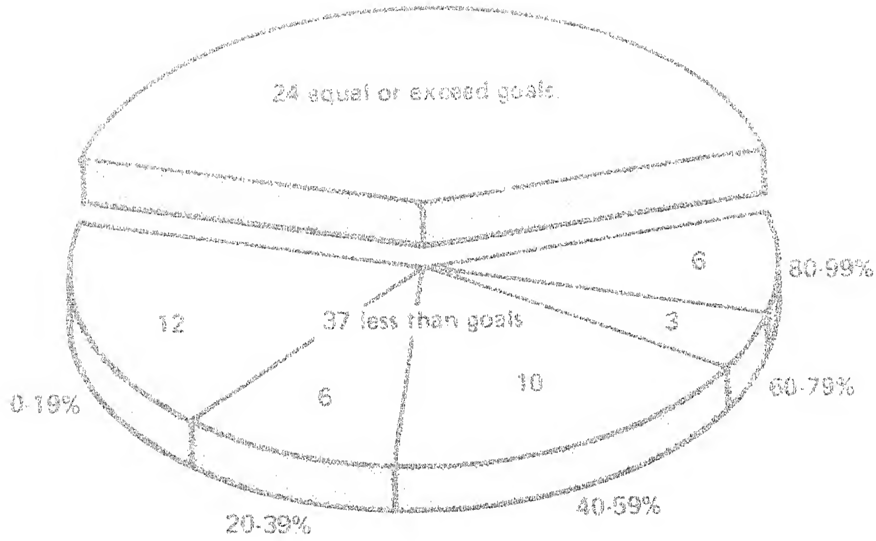


Figure 2

Status of the 61 family groups and individual materials in the stockpile inventory toward meeting the 1980 goals.

Annual Materials Plan

Presidential guidance and recent legislative amendments to the Strategic and Critical Materials Stock Piling Act require a planning process for restructuring the stockpile through the Annual Materials Plan (AMP). The AMP is a list of stockpile materials proposed for acquisition and disposal developed each year through an interagency committee chaired by FEMA. The agencies represented on the Annual Materials Plan Steering Committee are the Departments of Defense, Commerce, the Interior, Energy, Agriculture, State, and Treasury, the Central In-

The Strategic Implications Subcommittee, chaired by the Department of Defense, determines the impact of changes in defense requirements. The International Economic and Political Impacts Subcommittee, chaired by the Department of State, determines the impact of AMP proposals on international producers, trade agreements, and foreign producer countries. The Market Impact Subcommittee, chaired by the Department of Commerce, examines

the effect on commodity markets and develops the market impact statements. The Economic and Budgetary Impact Subcommittee, chaired by FEMA, examines the revenue and cost projections of the AMP proposal.

After the recommendations from the subcommittees have been incorporated, the AMP is reviewed by all member agencies. Upon inclusion of approved revisions, the Director of FEMA submits the AMP to the National Security Council and simultaneously provides a copy to the Office of Management and Budget. Any further revisions are made jointly by the National Security Council, the Office of Management and Budget and the Federal Emergency Management Agency.

In the course of the AMP process during the report period, the Department of State conducted consultations with producer countries on proposed disposal levels for excess materials in FY 1982. Comments were received from producers on a variety of materials including mercury, silver, tungsten, tin, industrial diamonds, chrysotile asbestos and antimony. Apart from the AMP consultation process, the issue of silver disposals was a major topic of discussion at the U.S./Mexican Trade Commission meetings and on the occasion of a series of high level visits to Peru by State Department officials.

In consultations with producers, it was emphasized that U.S. law requires that to the maximum extent feasible, stockpile transactions be conducted in a manner which avoids undue disruption of markets. Initial sales of excess materials have sent a clear signal that the government intends to be a responsible market participant as well as receive the best possible price for its materials.

Legislation

On June 2 and 4, 1981, the House Armed Services Committee, Subcommittee on Seapower and Strategic and Critical Materials, held hearings on the following four bills: H.R. 2912, sponsored by the Admini-tration, would authorize disposal of excess stockpile materials and authorize appropriations for acquisitions; H.R. 2784 would authorize disposal of the silver inventory; H.R. 2603 would authorize appropriations to purchase silver, platinum, and nickel; H.R. 3364 would establish a national mineral and materials policy and council.

On the Senate Side, the Armed Services Committee, Subcommittee on Preparedness, held hearings June 17 and 19, 1981, on S. 906, the companion bill to H.R. 2912, and on S. 1338, a bill to prescribe the method for determining the quantity of any material to be stockpiled based on import dependency.

After these hearings on both sides of the Congress, disposal and acquisition authorizations for the materials in the National Defense Stockpile were included in the Omnibus Budget Reconciliation Act of 1981 (Public Law 97-35) signed by the President on August 13, 1981. This Act authorizes the disposal of antimony, ashestos (amosite and chrysotile), diamond stones, diamond industrial crushing bort, iodine, mica (muscovite splittings, phlogopite splittings, muscovite film first and second qualities, muscovite block stained and lower), mercuric oxide, mercury, silver, and vegetable tannin, wattle. These disposals are authorized to be made over a three-year period from 1982 to 1984. Appropriations for acquisitions are authorized in the amount of $535 million. Actual appropriations for fiscal year 1981 are $100 million, and for fiscal year 1982 funding is $57.6 million.

The Budget Reconciliation Act also requires the President to reexamine stockpile requirements for silver no later than September 1, 1982, prior to any silver disposals in fiscal year 1983. Factors to be considered in this determination include the demand for silver and its domestic supply in each of the next ten years, the Nation's dependency on foreign sources of supply, and the effect of disposal on the world silver market, the silver mining industry, international currency and monetary policy and long range military preparedness.

Also included in the Budget Reconciliation Act are several amendments to the Strategic and Critical Materials Stock Piling Act:

Section 5(a): the five-year limit on use of appropriated funds is changed to "until expended," and a subsection is added requiring a report to the Congress of any significant changes in the Annual Materials Plan as submitted under Section 11(b).

Section 5(b): a cap is placed on the amount of moneys to be held in the National Defense Stockpile Transaction Fund of $1 billion until September 30, 1983, when the limitation becomes $500 million.

Section 9(b): the requirement for funds to revert to the Treasury after three years (if not appropriated) was deleted.

Section 11: a new section is added which requires an Annual Materials Plan to be submitted to Congress each year with the President's budget to include planned expenditures for acquisitions and anticipated receipts from sales. The plan is to cover the next fiscal year and the succeeding four fiscal years.

It should be noted that after the close of the report period, the Department of Defense Appropriation Act contained a provision to halt the sale of stockpile silver until reexamination is made of the silver goal and the proposed disposal method is approved by the Congress. The factors to be considered in this silver requirements determination are somewhat different, primarily more extensive, than those contained in the Budget Reconciliation Act. This determination is to be completed by July 1, 1982.

Revision of Data

Presidential and Congressional planning guidance calls for a stockpile capable of supporting the United States military, industrial, and essential civilian needs for three years during a major conventional war. It is assumed that prior industrial mobilization with attendant increased use of raw materials will occur, and that austerity measures will be in effect. These guidelines are incorporated into the econometric model used to estimate stockpile goals. Data used in this model covers many areas, such as consumption, production, capacity, imports and exports, and is revised frequently to ensure that a current estimate will be available.

During the report period, information and technical advice were provided by the Bureau of Mines on a number of strategic and critical materials proposed for acquisition and/or disposal. The 1980 volume of the 3-year "Mineral Facts and Problems" was published. This book contains a comprehensive description of industry structure, supply-demand relationships, technology, and outlooks to 1985 and 2000. The "Minerals Yearbook" recording significant commodity developments for the year was issued by individual chapters. Both of these Bureau of Mines publications are sources of data used by FEMA.

The Bureau of Mines issued a detailed report on the current status of the mineral industry of Zimbabwe which produces over 40 different minerals. In analyzing Zimbabwe's mineral industry, the influences of government policy, current economic conditions, labor supply, energy supply, and the transport system were evaluated. Of special interest to the United States and other industrialized countries are the chromium, gold, and asbestos industries in Zimbabwe.

Within the Department of Commerce, the Office of Industrial Resources Administration, with analytical support from the Bureau of Industrial Economics, provides consumption, supply, and domestic capacity data. During the report period, estimated consumption data for 73 materials, 1979 supply data for 24 materials, and 1979 domestic capacity data for 27 materials were submitted. In addition to the data for 1979, supply and domestic capacity studies provided projections for the years 1983 through 1985.

Research and Development

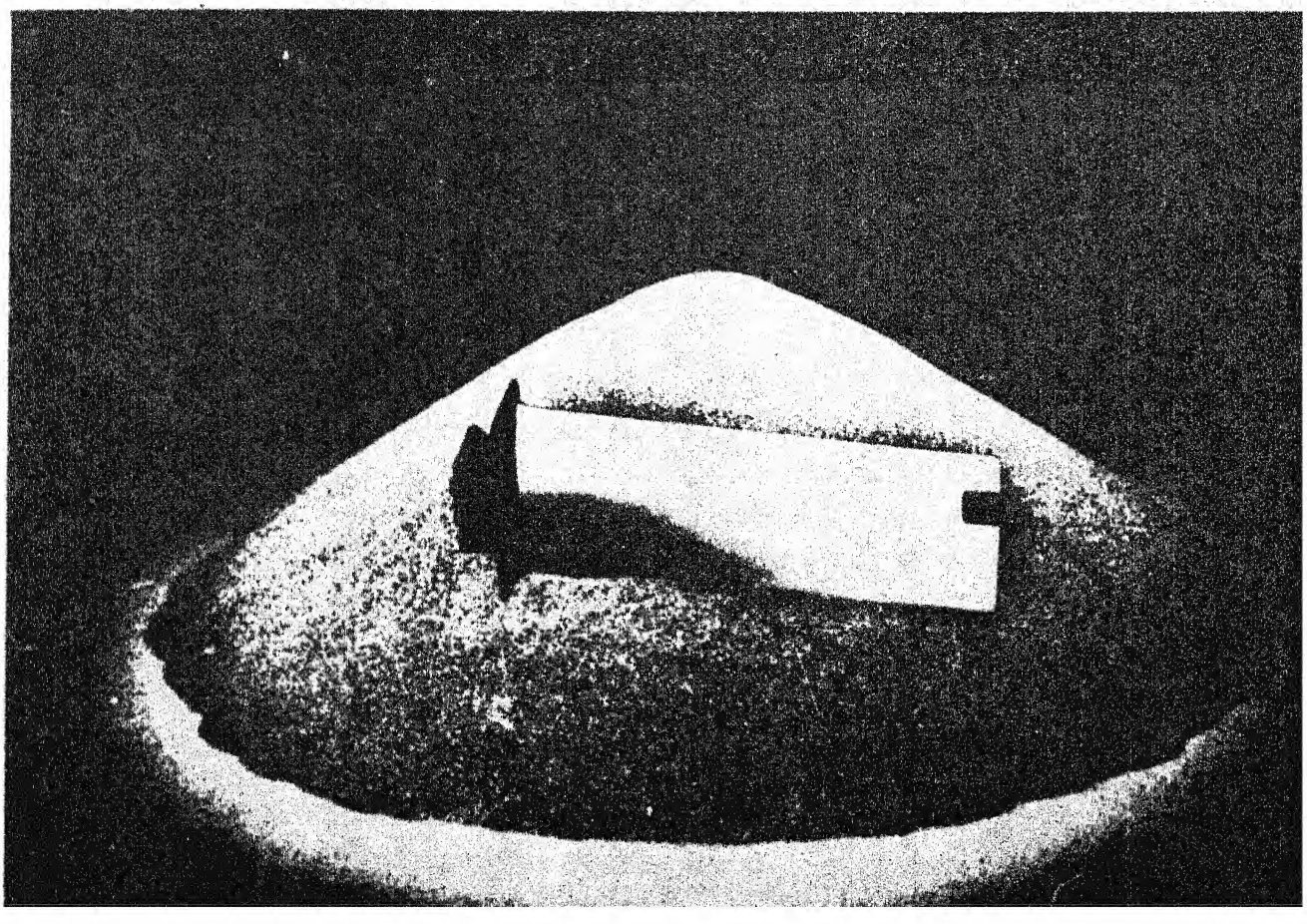
An alternative to stockpiling of strategic and critical materials is the development of domestic sources of supply. Additions to, or establishment of, domestic supply sources make possible a decrease in the stockpile goals. Therefore, research of a scientific,

technologic and economic nature to develop domestic production of substitutes for strategic and critical materials is a continuing part of the stockpile program. Mandated under section 8 of the Stock Piling Act, government-sponsored research is primarily carried on by the Departments of the Interior, Commerce, and Agriculture.

During the report period, the Bureau of Mines, the Department of Commerce, the Department of Defense, and FEMA continued joint sponsorship of National Materials Advisory Board, National Academy of Sciences studies on strategic and critical materials. The criteria and methodology suitable for evaluating proposals to upgrade stockpiled materials are being studied for aluminum, cobalt, copper, lead, tantalum, titanium, tungsten, and zinc. Another study examined trends in the use of columbium and tantalum to the year 2000 versus anticipated availability.

A National Materials Advisory Board panel, sponsored by the Bureau of Mines, completed its evaluation of world manganese reserves. Its published report reviews the technology of manganese production and consumption, assesses reserves, and discusses the industrial implications of reliance on a limited number of sources. A draft report on titanium availability was also completed by the Materials Advisory Board panel and sent to sponsoring agencies for review.

Turbine blades for use in jet engines are fabricated in net-shape using powder metallurgy technology and high purity titanium alloy.



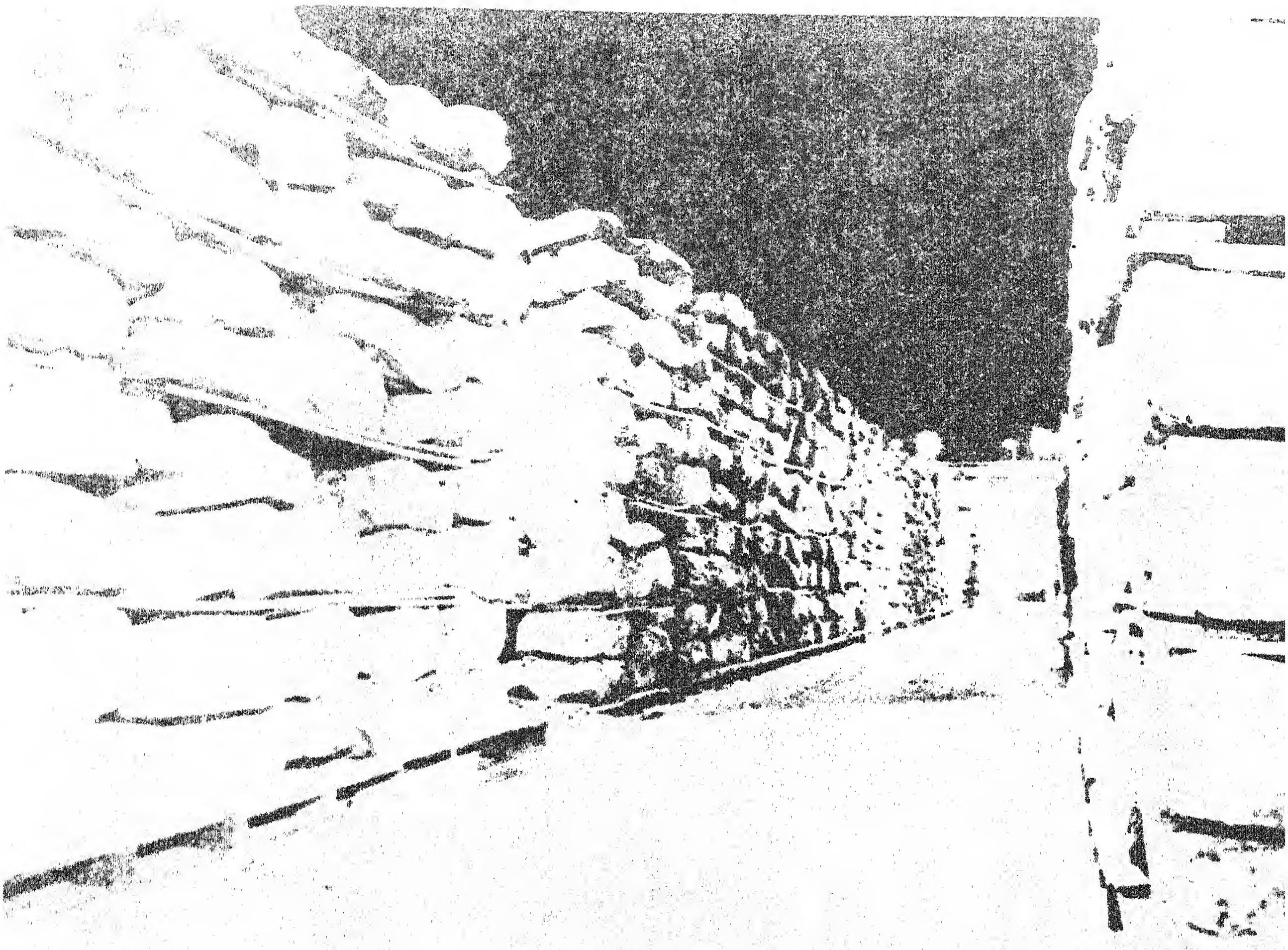
Mining and minerals processing research in the Bureau of Mines addresses national problems with special emphasis on minerals in the stockpile. Research activities are aimed at improved methods and equipment for extracting commodities, extending the useful life of materials, and developing domestic substitutes for strategic and critical minerals.

Research is being conducted to increase the use of domestic resources for the production of titanium. Sulfation, followed by water leaching, is being investigated for removing calcium, magnesium, and manganese from titaniferous materials so that the purified material will be a suitable feedstock for producing titanium by chlorination technology.

Other research is examining the direct recovery of titanium from deposits that contain substantial quantities of perovskite. Research is also being conducted to improve titanium processing and fabrication technology. The use of titanium components will be enhanced with improved processes for making titanium alloy powders that can be used to make near-net-shape components, and with improved casting techniques.

It is estimated that wear accounts for losses five times greater than those from corrosion. Materials selected for wear resistance are dependent upon alloys containing one or more strategic metals such as chromium, cobalt, manganese, nickel, and tungsten. Research is being conducted on new casting, cladding, and coating technologies, as well as energy-absorbing matrix alloys for use in high-wear applications that will reduce the amount of

Stockpiles of metallurgical fluorspar. (FEMA photo.)



Crude rubber stockpiled in 200-pound bales (FEMA photo)

other alloying elements required to achieve high heat resistance.

A potential source of cobalt, nickel, and other critical metals is unrecycled superalloy scrap and industrial waste. It is estimated that annually unrecycled or downgraded superalloy scrap contains [illegible] million pounds of cobalt, 5.4 million pounds of nickel, and 2.2 million pounds of chromium. [illegible] was contracted to assess the use of electro[illegible] to produce cobalt-nickel master [illegible] from [illegible] materials.

[illegible] Engineers on Alumina Process [illegible] Study and Preliminary Pilot Plant [illegible] and leaching of clay [illegible] technology option [illegible] dawsonite from oil shale, and coal mining waste as possible domestic sources of alumina.

Management

Executive Order 12155 vests responsibility for the management of the National Defense Stockpile in the Administrator of the General Services. Within the General Services Administration (GSA), the Federal Property Resources Service (FPRS) is assigned stockpile activities: market analysis, buying and selling stockpile materials, managing stockpile funds and budgets, storage, inspection, maintenance and security of the physical inventories.

Purchases

The Interagency Committee for Stockpile Purchase Specifications and Special Instructions, chaired by the Department of Commerce, has representatives from the Departments of Defense, State, the Interior, Agriculture, the General Services Administration, and FEMA. The Committee approved purchase specifications and special instructions for bauxite, abrasive grade; bauxite, refractory grade; beryllium metal, hot-pressed powder blocks; beryllium metal, vacuum cast ingot; iridium; palladium; platinum; tantalum source materials; vanadium pentoxide; and zinc. The Committee has under review purchase specifications and special instructions documents for metallurgical grade bauxite and titanium metal. The Department of Commerce is developing purchase specifications for technically specified hevea rubber, nickel, castor bean oil, acid grade fluorspar, and is assessing stockpile requirements for abaca and sisal cordage fibers.

Priority materials to be considered for stockpile acquisition were previously announced in March 1981. The initial items to be purchased are bauxite, cobalt, iridium, opium salts, quinidine sulfate, tantalum pentoxide and vanadium pentoxide. Acquisition plans are being undertaken based on market and technical analyses and the availability of funds from the 1981 appropriation of $100 million.

Stockpile purchases in FY 1981 began with cobalt. The United States is 90 percent dependent on imports for cobalt which is used in the production of high-temperature, high-strength superalloys vital to the manufacture of jet aircraft engines and missile guidance systems. A contract was signed on July 10, 1981, to acquire 5.2 million pounds of cobalt for a unit cost of $15 per pound delivered to depots. Societe Zairoise de Commercialisation des Minerals (Sozacom), Kinshasa, Zaire, was the successful bidder.

Proposals were received to supply 25,000 tons of refractory grade bauxite. This is a special type of bauxite, high in alumina content, used to manufacture refractory products for high heat and metallurgical processes. A contract award will be made when a review of the offers is completed.

Basic Ordering Agreements (contracts complete except for prices) will be signed with several suppliers of iridium to provide for individual procurement actions to take quick advantage of market opportunities anytime during the period of the agreement. Quantities and delivery periods would also depend on funds available during the fiscal year. These agreements with individual firms are subject to review annually. Iridium is the most corrosion-resistant element known. It is primarily used in precious metal alloys to increase hardness and corrosion resistance. Important uses include: catalysts, electrodes, electrical contact points, thermocouples, photographic papers, motors and precision instruments.

Plans were announced on September 25, 1981, to buy up to 61,050 pounds of tantalum. Industry proposals are being evaluated, and a contract is expected to be awarded in the near future. The electronics industry is the largest consumer of this material. The metal is used for the manufacture of such items as electrodes, valves, retorts and pipes, cutting tools and in surgical applications.

Plans were announced on September 11, 1981, to acquire at least 75,000 ounces of quinidine sulfate. Negotiations with potential suppliers are currently in process. The material is produced from quinine which is obtained from the bark of the cinchona tree, grown principally in Indonesia and Africa. It is a medicinal used to control irregular heartbeat.

The upgrading of stockpiled gum opium to opium salts is being considered. Discussions have been held with processors regarding an exchange of conversion by-products and excess stockpile materials as payment for producing salts from raw opium.

The government-owned William Langer Jewel Bearing Plant at Rolla, North Dakota, operated by the Bulova Watch Company, Inc., under contract to GSA, produces jewel bearings for sale to the stockpile and to defense contractors. Jewel bearings and related items ordered from the plant during the report period totaled 483,663 units. Orders from defense contractors for related items totaled 44,096 units. The plant was operated at a loss of $38,392

during the report period, due in part to a sharp decline in orders from defense contractors.

Barter/Exchange

Proposals were received regarding exchange of excess stockpile materials for needed materials. Other proposals involve barter of government-owned agricultural surpluses as a means to acquire materials for the stockpile. These barter/exchange arrangements were being reviewed at the close of the report period.

Sales

Sales of excess stockpile materials during the report period totaled approximately $43.6 million. These were cash transactions for industrial use. As shown in Table 1, the major sales were of tungsten ores and concentrates, industrial diamond stones, and tin.

In addition to tin sales, an agreement to transfer 1,500 tons of tin to the buffer stock was negotiated by the Office of the Special Trade Representative. The buffer stock was established under the Fifth International Tin Agreement.

The previous decline in domestic consumption of natural battery grade manganese dioxide has continued in 1981. A decline in economic activity in the U.S. has lowered demand for this material. The tungsten market remained quiet during the reporting period with no appreciable trading taking place. Consumers had sufficient inventory to cover their needs for the next few months, and prices remain soft. Indications are that domestic processors of vegetable tannins are in a stronger market position than they were in 1980. The level of activity is good and business is holding up well, despite less favorable conditions elsewhere in the economy.

TABLE I
DISPOSAL OF NATIONAL DEFENSE STOCKPILE MATERIALS
April 1, 1981 — September 30, 1981

Material	Unit	Quantity Sold	Value (Dollars)	Balance of Disposal Authorization Quantity
Antimony	ST	—	—	3,000
Asbestos, Amosite	ST	—	—	25,393
Asbestos, Crocidolite	ST	—	—	831
Asbestos, Chrysotile	ST	—	—	6,849
Celestite	SDT	—	—	13,415
Diamond, Industrial Stones	KT	490,127	7,766,780	4,225,681
Diamond Industrial Crushing Bort	KT	—	—	1,692,782
Kyanite	SDT	—	—	1,187
Iodine	LB	—	—	2,213,097
Manganese Dioxide, Battery, Natural	SDT	21,574	1,304,283	78,782
Manganese Chemical Grade	SDT	—	—	51,045
Manganese, Metallurgical Grade[1]	SDT	—	—	669,227
Mercury[2]	FL	—	—	50,000
Mercuric Oxide	LB	—	—	713,202
Mica, Muscovite Film 1st & 2nd quality	LB	—	—	150,000
Mica, Muscovite Block Stained & Lower	LB	—	—	150,000
Mica, Muscovite Splittings	LB	—	—	6,000,000
Mica, Phlogopite Splittings	LB	214,324	150,662	772,097
Quartz Crystals	LB	295,702	735,372	1,538,947
Rare Earth Oxide	SDT	—	—	488
Rubber (rotation)	LT	616	458,406	—
Silver[3]	TrOz	—	—	105,119,000
Talc, Block & Lump	ST	—	—	988
Talc, Ground	ST	—	—	1,089
Thorium Nitrate	LB	10,000	25,000	6,055,529
Tin	LT	1,755	24,408,996	32,875
Tungsten Ores & Concentrates	LB W	906,539	7,470,859	33,809,377
Vegetable Tannin, Chestnut	LT	291	162,532	7,091
Vegetable Tannin, Quebracho	LT	1,883	1,127,121	91,676
Vegetable Tannin, Wattle	LT	—	—	1,399
Total from National Defense Stockpile			$43,610,011	

[1]From the Defense Production Act inventory 7,840 SDT valued at $186,018 were sold.

[2]Sales under the Federal Property & Administration Service Act amounted to 2,500 flasks valued at $1.1 million.

[3]Sales halted pending revaluation.

Depot Maintenance

In addition to its stockpile responsibilities, the Federal Property Resources Service, GSA, provides for the receipt, storage, inspection, maintenance, security and shipping of materials at more than 100 depots nationwide. At appropriate stockpile facilities, a quantitative and qualitative analysis was conducted to determine the required and available storage space for each commodity in the acquisition program. A management information system was developed to provide current data regarding each storage facility.

A commodity quality assessment survey has been initiated for specific materials presently in the National Defense Stockpile. Selected commodities are those subject to deterioration or those of indeterminate quality due to significant specification changes since the materials were acquired. The materials selected for the initial sampling, analysis and evaluation are: cadmium sulfide, ilmenite, tungsten and cobalt.

Transaction Fund

GSA manages the National Defense Stockpile Transaction Fund into which all money from the sale of stockpile materials are placed. The purchases of needed materials are financed from money appropriated by Congress from the Fund.

During the period April 1 through September 30, 1981, $57,045,000 was received in the Fund. Collections to date total $189 million, of which $100 million has been appropriated for the acquisition of new materials.

Aerial view of typical GSA critical materials stockpiling facility. (FPR84-1 photo.)

STOCKPILE INVENTORY

Explanation of Table 2

The National Defense Stockpile total inventory as given in Table 2 excludes quantities that were sold but not shipped from depots to the purchasers. In the Statistical Supplement (available from the General Services Administration) the inventory is listed as "Total Inventory in Storage" with a separate line for "Unshipped Sales."

The Table 2 inventory quantities combine stockpile and nonstockpile grade materials, while separate lines can be found for each type in the Statistical Supplement. Nonstockpile grade material may vary only slightly from the stockpile grade and in some cases is temporarily credited toward goals.

For some materials where a goal deficit occurs, the excess of another form of the material is held to offset the shortage as indicated in the footnotes at the end of Table 2. The term "offset" means allocating one form of a material for an equivalent amount of another form.

Materials are grouped by "families," and a summary line for each basic family group is included. The materials have been grouped in each family according to their status as raw materials, semifinished products or finished products that contain the same common ingredient. The values shown in the summary line for each family group are expressed in the basic unit common to all members of the group. In all but three cases, this basic unit is the metal equivalent for each form. There is a different conversion factor for each form because each requires different technology and incurs different conversion losses. The factors used for calculating these equivalent amounts and the calculation procedures are in Appendix 2.

Market values are prices at which comparable materials are being traded, or in the absence of trading, values are estimates. They are not necessarily the amount that would be realized if the material were sold.

Abbreviations

AMA Lb	- Anhydrous Morphine Alkaloid (Pounds)
AvOz	- Avoirdupois Ounce
FL	- Flask (76-Pound)
KT	- Carat
LB	- Pound
LB Cb	- Pounds of Contained Columbium
LB Co	- Pounds of Contained Cobalt
LB Mo	- Pounds of Contained Molybdenum
LB Ta	- Pounds of Contained Tantalum
LB W	- Pounds of Contained Tungsten
LCT	- Long Calcined Ton
LDT	- Long Dry Ton
LT	- Long Ton
PC	- Piece
SDT	- Short Dry Ton
ST	- Short Ton
ST Ni+Co	- Short Tons of Contained Nickel plus Cobalt
ST V	- Short Tons of Contained Vanadium
TrOz	- Troy Ounces

Table 2

NATIONAL DEFENSE STOCKPILE INVENTORY OF STRATEGIC AND CRITICAL MATERIALS

September 30, 1981

Commodity	Unit	1980 Goal	Inventory	Value of Inventory (Millions $)	Quantity After Crediting Offset Excess	Deficit
1. Aluminum Metal Group	ST Al Metal	7,150,000	3,444,064	629.8		3,705,936
Alumina	ST	0	0	-		-
Aluminum	ST	700,000	1,733	2.7		698,267
Bauxite, Metal Grade, Jamaica Type	LDT	21,000,000	8,858,881	363.2		12,141,119
Bauxite, Metal Grade, Surinam Type	LDT	6,100,000	5,299,596	263.9		800,404
2. Aluminum Oxide, Abrasive Grain Group	ST Ab Grain	638,000	259,124	128.6		378,876
Aluminum Oxide, Abrasive Grain	ST	0	50,904	63.6	a	
Aluminum Oxide, Fused, Crude	ST	0	249,867	65.0	a	
Bauxite, Abrasive Grade	LCT	1,000,000	0	-		a
3. Antimony	ST	36,000	40,730	162.9	4,730	
4. Asbestos, Amosite	ST	17,800	42,534	21.9	25,534	
5. Asbestos, Chrysotile	ST	3,000	9,958	9.1	6,958	
6. Bauxite, Refractory	LCT	1,400,000	174,599	34.7		1,225,401
7. Beryllium Metal Group	ST Be Metal	1,220	1,061	158.9		159
Beryl Ore (11% BeO)	ST	18,000	17,987	22.8		13
Beryllium Copper Master Alloy	ST	7,900	7,387	74.3		513
Beryllium Metal	ST	400	229	61.8		171
8. Bismuth	LB	2,200,000	2,081,298	5.2		118,702
9. Cadmium	LB	11,700,000	6,328,809	11.9		5,371,191
10. Castor Oil (Sebacic Acid)	LB	22,000,000	12,524,243	9.4		b
11. Chromium, Chemical and Metallurgical Group	ST Cr Metal	1,353,000	1,324,921	1,063.0		28,079
Chromite, Chemical Grade Ore	SDT	675,000	262,414	14.3		c
Chromite, Metallurgical Grade Ore	SDT	3,200,000	2,488,043	260.8		c
Chromium, Ferro, High Carbon	ST	185,000	402,696	294.5	c	
Chromium, Ferro, Low Carbon	ST	75,000	318,892	418.1	c	
Chromium, Ferro, Silicon	ST	90,000	58,355	43.3		c
Chromium, Metal	ST	20,000	3,763	32.0		c
12. Chromite, Refractory Grade Ore	SDT	850,000	391,414	41.1		458,586

Table 2 (continued)

Commodity	Unit	1980 Goal	Inventory	Value of Inventory (Millions $)	Quantity After Crediting Offset Excess	Quantity After Crediting Offset Deficit
13. Cobalt	LB Co	85,400,000	40,802,393	770.8		44,597,607
14. Columbium Group	LB Cb Metal	4,850,000	2,510,528	33.5		2,339,472
Columbium Carbide Powder	LB Cb	100,000	21,372	.6		78,628
Columbium Concentrates	LB Cb	5,600,000	1,780,463	25.5		d
Columbium, Ferro	LB Cb	0	930,911	5.9	d	
Columbium, Metal	LB Cb	0	44,851	1.5	d	
15. Copper	ST	1,000,000	29,048	52.9		970,952
16. Cordage Fibers, Abaca	LB	155,000,000	0	-		155,000,000
17. Cordage Fibers, Sisal	LB	60,000,000	0	-		60,000,000
18. Diamond, Industrial Group	KT	29,700,000	41,939,184	491.8	12,239,184	
Diamond Dies, Small	PC	60,000	25,473	1.1		34,527
Diamond, Industrial, Crushing Bort	KT	22,000,000	23,692,782	59.2	1,692,782	
Diamond, Industrial, Stones	KT	7,700,000	18,233,666	431.5	10,533,666	
19. Feathers and Down	LB	1,500,000	0	-		1,500,000
20. Fluorspar, Acid Grade	SDT	1,400,000	895,983	161.3		504,017
21. Fluorspar, Metallurgical Grade	SDT	1,700,000	411,738	51.5		1,288,262
22. Graphite, Natural, Ceylon, Amorphous Lump	ST	6,300	5,499	10.7		802
23. Graphite, Natural, Malagasy, Crystalline	ST	20,000	17,904	35.8		2,096
24. Graphite, Natural, Other than Ceylon & Malagasy	ST	2,800	2,804	2.0	4	
25. Iodine	LB	5,800,000	8,013,074	57.1	2,213,074	
26. Jewel Bearings	PC	120,000,000	69,908,738	74.8		50,091,262
27. Lead	ST	1,100,000	601,036	516.9		498,964
28. Manganese, Dioxide, Battery Grade Group	SDT	87,000	222,136	21.3	135,136	
Manganese, Battery Grade, Natural Ore	SDT	62,000	219,125	16.7	e	
Manganese, Battery Grade, Synthetic Dioxide	SDT	25,000	3,011	4.6		e

Commodity	Unit	1980 Goal	Inventory	Value of Inventory (Millions $)	Quantity After Crediting Offset Excess	Deficit
29. Manganese, Chemical & Metallurgical Group	ST Mn Metal	1,500,000	1,970,715	536.8	470,715	
Manganese Ore, Chemical Grade	SDT	170,000	221,044	18.1	51,044	
Manganese Ore, Metallurgical Grade	SDT	2,700,000	3,370,085	199.2		f
Manganese, Ferro, High Carbon	ST	439,000	599,978	2 3.2	f	
Manganese, Ferro, Low Carbon	ST	0	0	-	-	
Manganese, Ferro, Medium Carbon	ST	0	28,920	22.0	f	
Manganese, Ferro, Silicon	ST	0	23,574	12.,	f	
Manganese Metal, Electrolytic	ST	0	14,172	19.8	f	
30. Mercury	FL	10,500	191,391	83.3	180,891	
31. Mica Muscovite Block, Stained & Better	LB	6,200,000	5,212,444	27.8		987,556
32. Mica Muscovite Film, 1st & 2nd Qualities	LB	90,000	1,274,889	14.9	1,184,889	
33. Mica Muscovite Splittings	LB	12,630,000	19,035,147	38.1	6,405,147	
34. Mica Phlogopite Block	LB	210,000	130,745	.1		79,255
35. Mica Phlogopite Splittings	LB	930,000	1,704,097	3.4	774,097	
36. Molybdenum Group	LB Mo	0	0	-	-	
Molybdenum Disulphide	LB Mo	0	0	-	-	
Molybdenum, Ferro	LB Mo	0	0	-	-	
37. Nickel	ST Ni+Co	200,000	0	-		200,000
38. Opium Group	AMA LB	130,000	71,303	29.6		58,697
Opium, Gum	AMA LB	0	31,795	6.7	g	
Opium, Salt	AMA LB	130,000	39,508	22.9		g
39. Platinum Group Metals, Iridium	Tr Oz	98,000	16,991	10.2		81,009
40. Platinum Group Metals, Palladium	Tr Oz	3,000,000	1,255,003	156.9		1,744,997
41. Platinum Group Metals, Platinum	Tr Oz	1,310,000	452,640	215.0		857,360
42. Pyrethrum	LB	500,000	0	-		500,000
43. Quartz Crystals	LB	600,000	2,128,149	12.8	1,528,149	
44. Quinidine	Av Oz	10,100,000	1,800,462	4.9		8,299,538
45. Quinine	Av Oz	4,500,000	3,246,164	6.2		1,253,836

Commodity	Unit	1980 Goal	Inventory	Value of Inventory (Millions $)	Quantity After Crediting Excess	Offset Deficit
46. Rubber[1]	MT	864,000	120,508	127.2		743,492
47. Rutile	SDT	106,000	39,186	12.7		66,814
48. Sapphire and Ruby	KT	0	16,305,502	.2	16,305,502	
49. Silicon Carbide, Crude	ST	29,000	80,550	36.2	51,550	
50. Silver, Fine	Tr Oz	0	139,500,000	1,262.5	139,500,000	
51. Talc, Steatite Block & Lump	ST	28	1,092	.4	1,064	
52. Tantalum Group	LB Ta Metal	7,160,000	2,391,940	205.0		4,768,060
Tantalum, Carbide Powder	LB Ta	0	28,688	5.0	h	
Tantalum Metal	LB Ta	0	201,133	44.2	h	
Tantalum Minerals	LB Ta	8,400,000	2,551,302	155.8		h
53. Thorium Nitrate	LB	600,000	7,131,812	19.6	6,531,812	
54. Tin[2]	MT	42,700	201,535	3,221.5	158,835	
55. Titanium Sponge	ST	195,000	32,331	458.8		162,669
56. Tungsten Group	LB W Metal	50,666,000	80,047,625	799.5	29,381,625	
Tungsten Carbide Powder	LB W	2,000,000	2,032,942	30.9	i	
Tungsten, Ferro	LB W	0	2,025,361	24.8	i	
Tungsten, Metal Powder	LB W	1,600,000	1,898,911	26.4	i	
Tungsten Ores & Concentrates	LB W	55,450,000	87,062,763	717.4	i	
57. Vanadium Group	ST V Metal	8,700	541	6.5		8,159
Vanadium, Ferro	ST V	1,000	0	-		1,000
Vanadium Pentoxide	ST V	7,700	541	6.5		7,159
58. Vegetable Tannin Extract, Chestnut	LT	5,000	16,393	8.8	11,393	
59. Vegetable Tannin Extract, Quebracho	LT	28,000	140,810	89.1	112,810	
60. Vegetable Tannin Extract, Wattle	LT	15,000	16,399	9.2	1,399	
61. Zinc	ST	1,425,000	376,310	370.7		1,048,690

[1] Unit changed from long tons to metric tons; inventory being rotated.

[2] Unit changed from long tons to metric tons.

a. **Aluminum Oxide, Fused Crude:** Hold 50,904 ST of aluminum oxide abrasive grain and 249,867 ST of aluminum oxide fused crude as offset against 379,253 LCT of bauxite abrasive grade.

b. **Castor Oil:** sebacic acid inventory is credited toward castor oil goal at the rate of 2.5 to 1.

c. **Chromium Group, Chemical and Metallurgical Grades:** metallurgical grade ore goal is 3,200,000 SDT of specification grade; inventory 1,956,824 SDT; shortfall 1,243,176 SDT.

(1) Hold 217,695 ST of Fe Cr high carbon against shortfall of 544,238 SDT of specification grade ore.
(2) Hold 243,892 ST of Fe Cr low carbon against 609,730 SDT of specification grade ore.
(3) Hold 89,208 SDT of non-specification grade metallurgical ore against the balance of the 89,208 SDT specification grade ore shortfall.
(4) Hold 47,466 SDT of non-specification grade metallurgical ore against a shortfall of 31,644 ST of Fe Cr Si.
(5) Hold 56,830 SDT of non-specification grade metallurgical ore against a shortfall of 16,237 ST of chromium metal.
(6) Hold 337,715 SDT of non-specification grade metallurgical ore against 337,715 SDT of chemical grade ore shortfall.

d. **Columbium Group:**

(1) Hold 930,911 pounds Cb as Fe Cb against 1,095,189 pounds Cb as concentrates.
(2) Hold 44,851 lb Cb as Cb metal against 52,766 lb Cb as concentrates.

e. **Manganese, Dioxide, Battery Grade Group:**

Hold 21,989 SDT of manganese, battery grade, natural ore against a shortfall of 21,989 SDT of manganese, battery grade, synthetic dioxide.

f. **Manganese Group, Chemical and Metallurgical Grades:** metallurgical grade ore goal is 2,700,000 SDT; inventory 2,409,377 SDT; shortfall 290,623 SDT of stockpile grade ore.

(1) Hold 14,172 ST of Mn metal against 35,430 SDT of metallurgical ore.
(2) Hold 23,574 ST of Fe Mn Si against 42,433 SDT of metallurgical ore.
(3) Hold 28,921 ST of Fe Mn medium carbon against 57,842 SDT of metallurgical ore.
(4) Hold 77,460 ST of Fe Mn high carbon against 154,920 SDT of metallurgical ore.
(5) Hold remaining 83,518 ST of Fe Mn high carbon against reduction of ore value in desired inventory mix.

g. **Opium:** Hold 31,795 AMA lb of opium gum against 31,795 AMA lb of opium salt goal.

h. **Tantalum Group:**

(1) Hold 201,133 lb Ta as Ta metal against 237,337 lb Ta as concentrates.
(2) Hold 28,688 lb Ta as Ta C against 33,852 lb Ta as concentrates.

i. **Tungsten Group:**

(1) WC powder goal is 2,000,000 lb W; stockpile grade inventory 1,921,167 lb W; shortfall 78,833 lb W. Hold 111,775 lb W as non-specification grade WC to offset 78,243 lb W as WC specification grade (assume 70% recovery of usable W).

(2) W metal powder goal is 1,600,000 lb W; inventory stockpile grade 1,566,964 lb W; shortfall 33,036 lb W. Non-stockpile grade W metal powder inventory is 331,947 lb W. Assume 70% recovery as usable material, then 331,947 x .70 = 232,363 lb W. Hold 67,194 lb W as non-specification grade powder to offset shortfall of 33,036 stockpile grade W powder.

(3) Hold balance of non-stockpile grade W powder 232,363 - 33,036 = 199,327 lb W as powder against 234,209 lbs W as concentrate.

(4) Hold 840,752 lbs W as Fe W stockpile grade against 987,884 lb W as concentrate. Hold 1,184,609 lb W nonstockpile grade Fe W at 70 percent recoverable against 974,341 lb W concentrate.

APPENDIX I

STRATEGIC AND CRITICAL MATERIALS STOCK PILING ACT

(50 U.S.C. 98 *et. seq.*)

SEC. 1. This Act may be cited as the 'Strategic and Critical Materials Stock Piling Act'.

FINDINGS AND PURPOSE

SEC. 2. (a) The Congress finds that the natural resources of the United States in certain strategic and critical materials are deficient or insufficiently developed to supply the military, industrial, and essential civilian needs of the United States for national defense.

(b) It is the purpose of this Act to provide for the acquisition and retention of stocks of certain strategic and critical materials and to encourage the conservation and development of sources of such materials within the United States and thereby to decrease and to preclude, when possible, a dangerous and costly dependence by the United States upon foreign sources for supplies of such materials in times of national emergency.

MATERIALS TO BE ACQUIRED; PRESIDENTIAL AUTHORITY AND GUIDELINES

SEC. 3. (a) The President shall determine from time to time (1) which materials are strategic and critical materials for the purposes of this Act, and (2) the quality and quantity of each such material to be required for the purposes of this Act and the form in which each such material shall be acquired and stored. Such materials when acquired, together with the other materials described in section 4 of this Act, shall constitute and be collectively known as the National Defense Stockpile (hereinafter in this Act referred to as the "stockpile").

(b) The President shall make the determinations required to be made under subsection (a) on the basis of the following principles:

(1) The purpose of the stockpile is to serve the interest of national defense only and is not to be used for economic or budgetary purposes.

(2) The quantities of the materials stockpiled should be sufficient to sustain the United States for a period of not less than three years in the event of a national emergency.

(c) The quantity of any material to be stockpiled under this Act, as determined under subsection (a), may not be revised unless the Committees on Armed Services of the Senate and House of Representatives are notified in writing of the proposed revision and the reasons for such revision at least 30 days before the effective date of such revision.

MATERIALS CONSTITUTING THE NATIONAL DEFENSE STOCKPILE

SEC. 4. (a) The stockpile consists of the following materials:

(1) Materials acquired under this Act and contained in the national stockpile on the day before the date of the enactment of the Strategic and Critical Materials Stock Piling Revision Act of 1979.

(2) Materials acquired under this Act on or after the date of the enactment of the Strategic and Critical Materials Stock Piling Revision Act of 1979.

(3) Materials in the supplemental stockpile established by section 104(b) of the Agricultural Trade Development and Assistance Act of 1954 (as in effect from September 21, 1959, through December 31, 1966) on the day before the date of the enactment of the Strategic and Critical Materials Stock Piling Revision Act of 1979.

(4) Materials acquired by the United States under the provisions of section 303 of the Defense Production Act of 1950 (50 U.S.C. App. 2093) and transferred to the stockpile by the President pursuant to subsection (f) of such section.

(5) Materials transferred to the United States under section 663 of the Foreign Assistance Act of 1961 (22 U.S.C. 2423) that have been determined to be strategic and critical materials for the purposes of this Act and that are allocated by the President under subsection (b) of such section for stockpiling in the stockpile.

(6) Materials acquired by the Commodity Credit Corporation and transferred to the stockpile under section 4(h) of the Commodity Credit Corporation Charter Act (15 U.S.C. 714b(h)).

(7) Materials acquired by the Commodity Credit Corporation under paragraph (2) of section 103(a) of the Act entitled 'An Act to provide for greater stability in agriculture; to augment the marketing and disposal of agricultural products; and for other purposes', approved August 28, 1954 (7 U.S.C. 1743(a)), and transferred to the stockpile under the third sentence of such section.

(8) Materials transferred to the stockpile by the President under paragraph (4) of section 103(a) of such Act of August 28, 1954.

(9) Materials transferred to the stockpile under subsection (b).

(b) Notwithstanding any other provision of law, any material that (1) is under the control of any department or agency of the United States, (2) is determined by the head of such department or agency to be excess to its needs and responsibilities, and (3) is required for the stockpile shall be transferred to the stockpile. Any such transfer shall be made without reimbursement to such department or agency, but all costs required to effect such transfer shall be paid or reimbursed from funds appropriated to carry out this Act.

AUTHORITY FOR STOCKPILE OPERATIONS

SEC. 5. (a) (1) Except for acquisitions made under the authority of paragraph (3) or (4) of section 6(a), no funds may be obligated or appropriated for acquisition of any material under this Act unless funds for such acquisition have been authorized by law. Funds appropriated for such acquisition (and for transportation and other incidental expenses related to such acquisition) shall remain available until expended, unless otherwise provided in appropriation Acts.

(2) If for any fiscal year the President proposes certain stockpile transactions in the annual materials plan submitted to Congress for that year under section 11(b) and after that plan is submitted the President proposes (or Congress requires) a significant change in any such transaction, or a significant transaction not included in such plan, no amount may be obligated or expended for such transaction during such year until the President has submitted a full statement of the proposed transaction to the appropriate committees of Congress and a period of 30 days has passed from the date of the receipt of such statement by such committees or until each such committee, before the expiration of such period, notifies the President that it has no objection to the proposed transaction. In computing any 30-day period for the purpose of the preceding sentence, there shall be excluded any day on which either House of Congress is not in session because of an adjournment of more than three days to a day certain.

(b) Except for disposals made under the authority of paragraph (4) or (5) of section 6(a) or under section 7(a), no disposal may be made from the stockpile (1) unless such disposal, including the quantity of the material to be disposed of, has been specifically authorized by law, or (2) if the disposal would result in there being a balance in the National Defense Stockpile Transaction Fund in excess of $1,000,000,000 or, in the case of a disposal to be made after September 30, 1983, if the disposal would result in there being a balance in the fund in excess of $500,000,000.

(c) There is authorized to be appropriated such sums as may be necessary to provide for the transportation, processing, refining, storage, security, maintenance, rotation, and disposal of materials contained in or acquired for the stockpile. Funds appropriated for such purposes shall remain available to carry out the purposes for which appropriated for a period of two fiscal years, if so provided in appropriation Acts.

STOCKPILE MANAGEMENT

SEC. 6. (a) The President shall—

(1) acquire the materials determined under section 3(a) to be strategic and critical materials;

(2) provide for the proper storage, security, and maintenance of materials in the stockpile;

(3) provide for the refining or processing of any material in the stockpile when necessary to convert such material into the form most suitable for storage and subsequent disposition;

(4) provide for the rotation of any material in the stockpile when necessary to prevent deterioration of such material by replacement of such material with an equivalent quantity of substantially the same material;

(5) subject to the notification required by subsection (d)(2), provide for the timely disposal of materials in the stockpile that (A) are excess to stockpile requirements, and (B) may cause a loss to the Government if allowed to deteriorate; and

(6) subject to the provisions of section 5(b), dispose of materials in the stockpile the disposal of which is specifically authorized by law.

(b) Except as provided in subsections (c) and (d), acquisition of strategic and critical materials under this Act shall be made in accordance with established Federal procurement practices, and, except as provided in subsections (c) and (d) and in section 7(a), disposal of materials from the stockpile shall be made by formal advertising or competitive negotiation procedures. To the maximum extent feasible—

(1) competitive procedures shall be used in the acquisition and disposal of such materials;

(2) efforts shall be made in the acquisition and disposal of such materials to avoid undue disruption of the usual markets of producers, processors, and consumers of such materials and to protect the United States against avoidable loss; and

(3) disposal of such materials shall be made for domestic consumption.

(c)(1) The President shall encourage the use of barter in the acquisition of strategic and critical materials for, and the disposal of materials from, the stockpile when acquisition or disposal by barter is authorized by law and is practical and in the best interest of the United States.

(2) Materials in the stockpile, the disposition of which is authorized by law, shall be available for transfer at fair market value as payment for expenses (including transportation and other incidental expenses) of acquisition of materials, or of refining, processing, or rotating materials, under this Act.

(3) To the extent otherwise authorized by law, property owned by the United States may be bartered for materials needed for the stockpile.

(d)(1) The President may waive the applicability of any provision of the first sentence of subsection (b) to any acquisition of material for, or disposal of material from, the stockpile. Whenever the President waives any such provision with respect to any such acquisition or disposal, or whenever the President determines that the application of paragraph (1), (2), or (3) of such subsection to a particular acquisition or disposal is not feasible, the President shall notify the Committees on Armed Services of the Senate and House of Representatives in writing of the proposed acquisition or disposal at least thirty days before any obligation of the United States is incurred in connection with such acquisition or disposal and shall include in such notification the reasons for not complying with any provision of such subsection.

(2) Materials in the stockpile may be disposed of under subsection (a)(5) only if the Committees on Armed Services of the Senate and House of Representatives are notified in writing of the proposed disposal at least thirty days before any obligation of the United States is incurred in connection with such disposal.

(e) The President may acquire leasehold interests in property, for periods not in excess of twenty years, for storage, security, and maintenance of materials in the stockpile.

SPECIAL DISPOSAL AUTHORITY OF THE PRESIDENT

SEC. 7. (a) Materials in the stockpile may be released for use, sale, or other disposition—

(1) on the order of the President, at any time the President determines the release of such materials is required for purposes of the national defense; and

(2) in time of war declared by the Congress or during a national emergency, on the order of any officer or employee of the United States designated by the President to have authority to issue disposal orders under this subsection, if such officer or employee determines that the release of such materials is required for purposes of the national defense.

(b) Any order issued under subsection (a) shall be promptly reported by the President, or by the officer or employee issuing such order, in writing, to the

Committees on Armed Services of the Senate and House of Representatives.

MATERIALS DEVELOPMENT AND RESEARCH

SEC. 8. (a)(1) The President shall make scientific, technologic, and economic investigations concerning the development, mining, preparation, treatment, and utilization of ores and other mineral substances that (A) are found in the United States, or in its territories or possessions, (B) are essential to the national defense, industrial, and essential civilian needs of the United States, and (C) are found in known domestic sources in inadequate quantities or grades.

(2) Such investigations shall be carried out in order to—

(A) determine and develop new domestic sources of supply of such ores and mineral substances;

(B) devise new methods for the treatment and utilization of lower grade reserves of such ores and mineral substances; and

(C) develop substitutes for such essential ores and mineral products.

(3) Investigations under paragraph (1) may be carried out on public lands and, with the consent of the owner, on privately owned lands for the purpose of exploring and determining the extent and quality of deposits of such minerals, the most suitable methods of mining and beneficiating such minerals, and the cost at which the minerals or metals may be produced.

(b) The President shall make scientific, technologic, and economic investigations of the feasibility of developing domestic sources of supplies of any agricultural material or for using agricultural commodities for the manufacture of any material determined pursuant to section 3(a) of this Act to be a strategic and critical material or substitutes therefor.

NATIONAL DEFENSE STOCKPILE TRANSACTION FUND

SEC. 9. (a) There is established in the Treasury of the United States a separate fund to be known as the National Defense Stockpile Transaction Fund (hereinafter in this section referred to as the 'fund').

(b)(1) All moneys received from the sale of materials in the stockpile under paragraphs (5) and (6) of section 6(a) shall be covered into the fund. Such moneys shall remain in the fund until appropriated.

(2) Moneys covered into the fund under paragraph (1) shall be available, when appropriated therefor, only for the acquisition of strategic and critical materials under section 6(a)(1) of this Act (and for transportation related to such acquisition).

(3) Moneys in the fund, when appropriated, shall remain available until expended, unless otherwise provided in appropriation Acts.

(c) All moneys received from the sale of materials being rotated under the provisions of section 6(a)(4) or disposed of under section 7(a) shall be covered into the fund and shall be available only for the acquisition of replacement materials.

ADVISORY COMMITTEES

SEC. 10. (a) The President may appoint advisory committees composed of individuals with expertise relating to materials in the stockpile or with expertise in stockpile management to advise the President with respect to the acquisition, transportation, processing, refining, storage, security, maintenance, rotation, and disposal of such materials under this Act.

(b) Each member of an advisory committee established under subsection (a) while serving on the business of the advisory committee away from such member's home or regular place of business shall be allowed travel expenses, including per diem in lieu of subsistence, as authorized by section 5703 of title 5, United States Code, for persons intermittently employed in the Government service.

REPORTS TO CONGRESS

SEC. 11 (a) The President shall submit to the Congress every six months a written report detailing operations under this Act. Each such report shall include—

(1) information with respect to foreign and domestic purchases of materials during the preceding 6-month period;

(2) information with respect to the acquisition and disposal of materials under this Act by barter, as provided for in section 6(c) of this Act, during such period;

(3) a statement and explanation of the financial status of the National Defense Stockpile Transaction Fund and the anticipated appropriations to be made from the fund during the next fiscal year; and

(4) such other pertinent information on the administration of this Act as will enable the Congress to evaluate the effectiveness of the program provided for under this Act and to determine the need for additional legislation.

(b) The President shall submit to the appropriate committees of the Congress each year with the Budget submitted to Congress pursuant to Section 201(a) of the Budget and Accounting Act, 1921 (31 U.S.C. 11(a)), for the next fiscal year a report containing an annual materials plan for the operation of the stockpile during such fiscal year and the succeeding four fiscal years. Each such report shall include details of planned expenditures for acquisition of strategic and critical materials during such period (including expenditures to be made from appropriations from the general fund of the Treasury) and of anticipated receipts from proposed disposals of stockpile materials during such period.

DEFINITIONS

SEC. 12. For the purposes of this Act:

(1) The term 'strategic and critical materials' means materials that (A) would be needed to supply the military, industrial, and essential civilian needs of the United States during a national emergency, and (B) are not found or produced in the United States in sufficient quantities to meet such need.

(2) The term 'national emergency' means a general declaration of emergency with respect to the national defense made by the President or by the Congress.

SEC. 13. Notwithstanding any other provision of law, on and after January 1, 1972, the President may not prohibit or regulate the importation into the United States of any material determined to be strategic and critical pursuant to the provisions of this Act, if such material is the product of any foreign country or area not listed as a Communist-dominated country or area in general headnote 3(d) of the Tariff Schedules of the United States (19 U.S.C. 1202), for so long as the importation into the United States of material of that kind which is the product of such Communist-dominated countries or areas is not prohibited by any provision of law.

APPENDIX 2

CALCULATION PROCEDURE FOR FAMILY GROUPINGS OF MATERIALS

The following example is designed to help the reader perform and understand the conversions and calculations used in preparing summary lines for basic family groupings. The purpose in using basic units for each of the families or groups of materials is to place the content of the primary material into a common denominator for easier comparison.

In time of emergency, there would be a need for a mix of various forms of each metal element. The stockpile goal for a metal is a mix of products at various stages of upgrading. The goal is calculated by examining expected wartime requirements, availability, and domestic capability to produce each of the upgraded forms.

There is a different factor for converting each of the forms into a common denominator, usually the basic metal equivalent. The conversion factors are different because process conversion losses vary. The calculations and conversions used for beryllium metal group are shown as an example. The figures used do not reflect the current inventory quantities.

The beryllium metal group has a surplus of beryl ore (11%BeO) and shortfalls of beryllium copper master alloy (BCMA) and beryllium metal. Beryl ore is a raw material used in producing the other two products. The surplus of beryl ore is used to offset the shortfall of the upgraded forms, but in different proportions for each product because of the product composition and the accompanying processing loss.

Commodity	Unit	Goal	Total Inventory	Excess	Deficit
Beryllium Metal	**ST Be Metal**	**1,563**	**1,061**		**502**
Beryl Ore (11% BeO)	ST	0	17,986	0	0
Beryllium Copper Master Alloy	ST	16,710	7,387	0	0
Beryllium Metal	ST	895	229	0	502

PROCEDURE

te that the available surplus of beryl ore is ST.

lculate the shortfall of BCMA.

710 ST Goal minus 7,387 ST inventory 9,323 ST shortfall.

lculate the quantity of beryl ore required to ,323 ST of BCMA.

23 ST BCMA times 1.3 equals 12,120 ST re.

lculate the basic unit equivalent of the 9,323 BCMA.

23 ST BCMA times 0.04 equals 373 ST ım metal.

btract the quantity of ore . .lculated to offset rtfall of BCMA (3 above) from the total quan- ore available (1 above).

986 ST ore minus 12,120 ST ore equals 5,866 ore remaining.

e remaining quantity of surplus ore not used r the BCMA shortfall can now be used to off- set part of the shortfall of beryllium metal. Convert the remaining ore to beryllium metal.

5,866 ST ore times 0.02801 equals 164 ST beryllium metal.

7. The total surplus beryl ore has been converted to the two upgraded forms, BCMA and beryllium metal, to cover the shortfall of these forms. The balance of excess ore is now zero.

12,120 ST ore converted to 9,323 ST BCMA.

5,866 ST ore converted to 164 ST beryllium metal.

Total 17,986 ST ore converted to BCMA and beryllium metal.

In converting the ore to beryllium metal, only one conversion was required. To convert the BCMA to the basic unit, i.e., beryllium metal, an additional conversion is needed. BCMA contains a nominal 4 percent beryllium metal. To convert the BCMA to beryllium metal, simply multiply 9,323 BCMA ST by .04 which equals 373 ST of beryllium metal.

The conversion to basic units is now complete.

12,120 ST ore to BCMA to beryllium metal equals 373 ST.

5,866 ST ore to beryllium metal equals 164 ST.

Total of 17,986 ST ore equals 537 ST beryllium metal.

EXAMPLE - BERYLLIUM METAL (ST)

	Beryl Ore (11% BeO)	Equivalent Basic Units
Excess to Goal	17,986	
Converted to Offset BCMA Shortfall (9,323 X 1.3)	-12,120	373
Balance	5,866	
Converted to Offset Beryllium Metal Shortfall (5,866 X 0.02801)	-5,866	164
Balance of Excess	0	
Total of Basic Units Offset		537

The balance of the family totals is shown in the table. Each of the forms of beryllium material has been converted to the basic beryllium metal units for easy subtraction and addition. Surplus material is shown as positive, shortfalls are shown as negative. The final balance for the family is 1,061 ST in inventory, 1,563 ST needed for the goal, leaving a shortfall of 502 ST beryllium metal.

Balance of Family Totals in Basic Units

	Inventory	Goal	Excess (+) Deficit (-)
Beryl Ore (11% BeO)	537	0	537
BCMA	295	668	-373
Beryllium Metal	229	895	-666
Total	1,061	1,563	-502

Factors Used for Converting Materials Into Family Groups

erials	Unit	Multiple Factor	Basic Family Unit
	ST	0.518	Metal Equivalent, Aluminum
um Oxide, Fused, Crude	ST	0.833	Aluminum Oxide, Abrasive Grain
, Abrasive Grade	LT	0.641	Aluminum Oxide, Abrasive Grain S.T.
, Metal Grade, Jamaica Type	ST	0.231	Metal Equivalent, Aluminum
, Metal Grade, Surinam Type	ST	0.264	Metal Equivalent, Aluminum
re (1% BeO)	ST	0.028	Metal Equivalent, Beryllium
m Copper Master Alloy (4% Be)	ST	0.04	Metal Equivalent, Beryllium
te, Chemical Grade Ore	ST	0.286	Metal Equivalent, Chromium
te, Metallurgical Grade Ore	ST	0.286	Metal Equivalent, Chromium
um, Ferro, High Carbon	ST	0.714	Metal Equivalent, Chromium
um, Ferro, Low Carbon	ST	0.714	Metal Equivalent, Chromium
um, Ferro, Silicon	ST	0.429	Metal Equivalent, Chromium
bium, Concentrates	LB	0.850	Metal Equivalent, Columbium
nd Dies, Small	PC	0.50	Carat
mese, Dioxide, Battery Grade	STU	1.000	Manganese, Dioxide, Battery Grade, Synthetic
mese, Chemical Grade	ST	0.400	Metal Equivalent, Manganese
mese, Metallurgical Grade	ST	0.400	Metal Equivalent, Manganese
mese, Ferro, High Carbon	ST	0.800	Metal Equivalent, Manganese
mese, Ferro, Medium Carbon	ST	0.800	Metal Equivalent, Manganese
mese, Ferro, Silicon	ST	0.720	Metal Equivalent, Manganese
n Gum	AMA LB	1.000	Opium Salts
lum Minerals	LB	0.85	Metal Equivalent, Tantalum
sten Ores and Concentrates	LB	0.851	Metal Equivalent, Tungsten